

8.0 Gunnison, Colorado, Disposal Site

8.1 Compliance Summary

The Gunnison, Colorado, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site, was inspected on June 3, 2008. The disposal cell and all associated surface water diversion and drainage structures were in excellent condition and functioning as designed. Six riprap test areas on the cell apron and diversion ditches were visually inspected; no apparent rock degradation was noted when compared to previous photos. A deep-rooted shrub was removed from the top of the disposal cell. The perimeter fence was repaired at several locations from damage caused by significant snow accumulations during the winter. Several damaged and missing perimeter signs were replaced. Snowmelt runoff resulted in minor erosion near the southeast corner of the site; repair is not warranted at this time. No other maintenance needs or cause for a follow-up or contingency inspection was identified.

8.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the Gunnison Disposal Site are specified in the *Long-Term Surveillance Plan [LTSP] for the Gunnison, Colorado, Disposal Site* (DOE/AL/62350-222, Rev. 2, U.S. Department of Energy [DOE], Albuquerque Operations Office, April 1997) and in procedures established by DOE to comply with requirements of Title 10 *Code of Federal Regulations* Part 40.27 (10 CFR 40.27). These requirements are listed in Table 8-1.

Table 8-1. License Requirements for the Gunnison Disposal Site

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Section 3.1	Section 8.3.1
Follow-Up or Contingency Inspections	Section 3.5	Section 8.3.2
Routine Maintenance and Repairs	Section 5.0	Section 8.3.3
Groundwater Monitoring	Section 4.1	Section 8.3.4
Corrective Action	Section 6.0	Section 8.3.5

Institutional Controls—Institutional controls at the disposal site, as defined by DOE Policy 454.1, consist of federal ownership of the property, a site perimeter fence, warning/no-trespassing signs placed along the property boundary, and locked gates on the site perimeter. The 92-acre disposal site is owned by the United States of America and was accepted under the U.S. Nuclear Regulatory Commission (NRC) general license (10 CFR 40.27) in 1997. DOE is the licensee and, in accordance with the requirements for UMTRCA Title I sites, is responsible for the custody and long-term care of the site.

Inspectors found no evidence that these institutional controls were ineffective or violated.

8.3 Compliance Review

8.3.1 Annual Inspection and Report

The site, located southeast of Gunnison, Colorado, was inspected on June 3, 2008. Results of the inspection are described below. Features and photograph locations (PLs) mentioned in this report are shown on Figure 8–1. Numbers in the left margin of this report refer to items summarized in the “Executive Summary” table.

8.3.1.1 Specific Site-Surveillance Features

Access Road, Entrance Gate, Signs, and Fence—Access to the site is off Gunnison County Road 42 onto U.S. Bureau of Land Management (BLM) Road 3068 to the site entrance gate. The road to the site is an all-weather gravel road maintained by BLM and is in good condition.

The entrance gate is a simple barbed-wire gate in the stock fence that surrounds the site. The entrance gate, located along the south portion of the perimeter fence, is secured by a padlock and chain to the adjoining post and is in good condition. Two other locked barbed-wire gates—one on the north fence line and the other on the east fence line—provide monitor well access. The gates were locked and in excellent condition.

8A A three-strand, barbed-wire fence delineates the site; most of it is set along the property boundary. Fence strands were broken at several locations along the north and west sides of the site (PL–1). This damage is attributed to the above-average snow accumulation that occurred during the past winter. The broken strands were repaired on June 19, 2008.

8B The entrance sign, located at the south entrance gate, is in good condition. Forty-five perimeter signs are bolted to the perimeter fence posts. Nine perimeter signs (P2, P7, P8, P9, P10, P11, P12, P13, and P42) were heavily damaged by bullets (PL–2), and one perimeter sign (P38) was missing; new signs were installed at these locations on June 19, 2008. The remaining signs were in good condition.

Site Markers, Survey Monuments, and Boundary Monuments—Both granite site markers, SMK–1 just inside the south entrance gate and SMK–2 on top of the disposal cell, were in excellent condition. Combined survey/boundary monuments, SM–1/BM–1, SM–2/BM–2, and SM–3/BM–3, and eight additional boundary monuments, BM–4 through BM–11, also were in excellent condition.

Monitor Wells—Sixteen wells constitute the groundwater monitoring network at the disposal site. Six of the wells are for monitoring cell performance, two for monitoring background groundwater quality, and eight for water-level measurements. The wells were secure and in excellent condition.

8.3.1.2 Transects

To ensure a thorough and efficient inspection, the site was divided into four transects: (1) the riprap-covered disposal cell; (2) the riprap-covered side slopes, apron, and diversion ditches; (3) the area between the disposal cell and the site boundary; and (4) the outlying area.

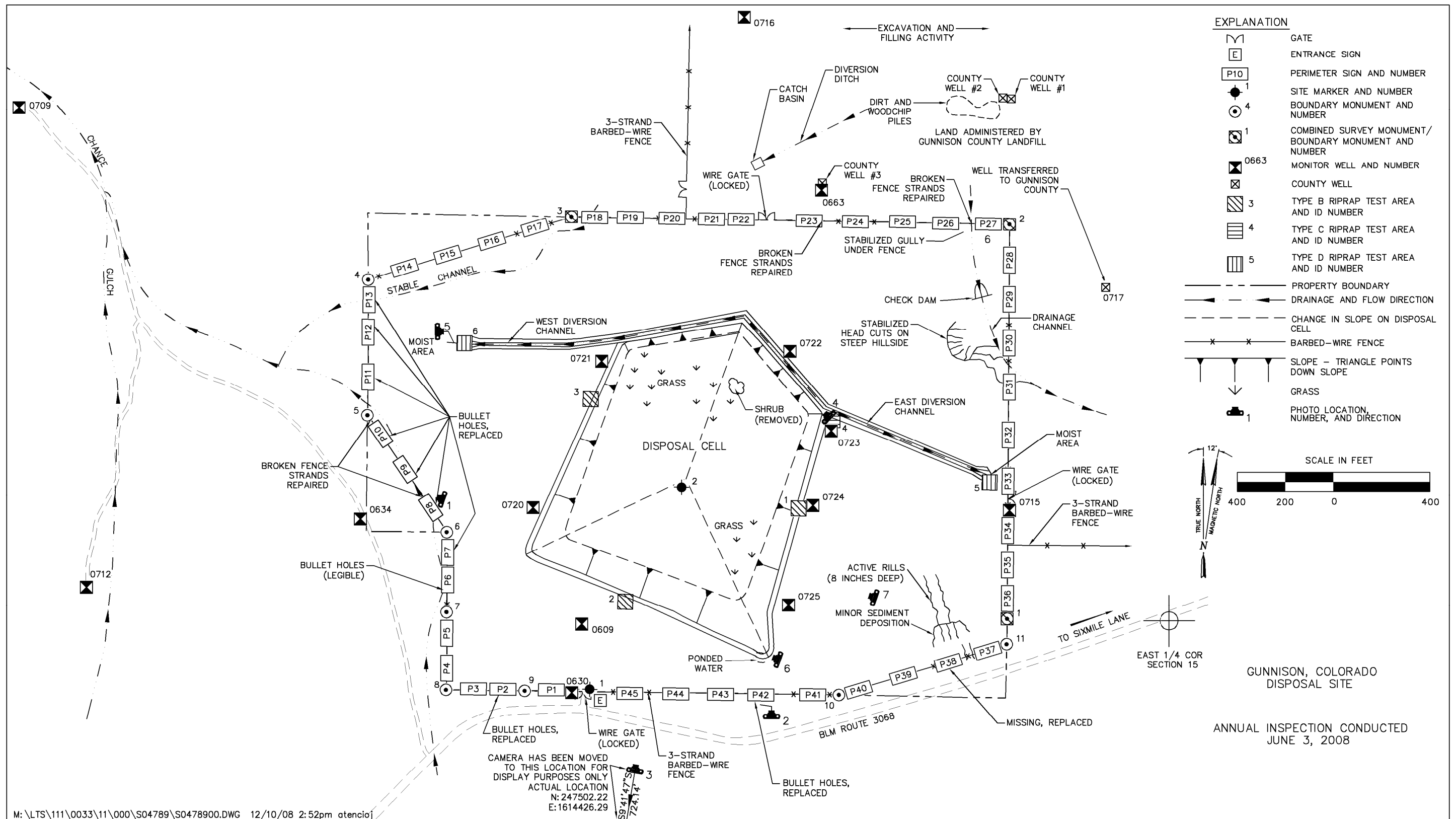


Figure 8-1. 2008 Annual Compliance Drawing for the Gunnison Disposal Site

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Transect four included an inspection of several reseeded areas on reclaimed former haul roads.

The area inside each transect was inspected by walking a series of traverses. Within each transect, the inspectors examined specific site-surveillance features, drainage structures, vegetation, and other features. Inspectors also looked for evidence of settlement, erosion, or other modifying processes that might affect the site's integrity or long-term performance.

8C **Top of Disposal Cell**—The top of the disposal cell was in excellent condition. There was no evidence of erosion, settling, slumping, or rock degradation (PL-3). Several isolated patches of grass were randomly distributed over the disposal cell cover; however, these shallow-rooted plants are not a cause for concern. One small deep-rooted shrub was found on the cell top and was cut and treated with herbicide in accordance with the LTSP. Many small indentations continue to be present on the cell cover. The indentations, with dimensions up to 4 inches across and up to 4 inches deep, appear to have been caused by pronghorn antelope. None of the indentations penetrate into the bedding layer under the rock cover, and they are not a cause for concern.

Side Slopes, Apron, and Diversion Ditches—The riprap-covered side slopes, apron, and diversion ditches were in excellent condition (PL-4 and PL-5). No evidence of slumping, settling, rock degradation, or encroachment of vegetation was observed.

The condition of the riprap in six monitoring test areas was visually inspected. The test areas, each roughly 1 square meter in area, are in critical flow path locations in the apron and diversion channels. The corners of each monitoring plot are marked with orange paint. The riprap in all of the test areas was in excellent condition. When compared with the photos taken in 2007, there was no evidence that individual rocks have split or otherwise been degraded. As outlined in the LTSP, annual photographing and comparing of these test areas was performed through 2002; after that, the LTSP requires the test areas to be photographed every 5 years (through 2017). The next photo documentation event will occur in 2012.

At the southeast corner of the cell apron, water draining from the cell occasionally ponds in a low-lying area along the edge of the riprap. The riparian-type vegetation that has become established in this area indicates that the area retains moisture much of the time. Water collection in this area does not pose a problem because the cell is designed to drain to the southeast, and any water that ponds is below the elevation of the entombed tailings material. Ponded water was present in the apron (PL-6), and the soil in this area was moist at the time of the inspection.

Area Between the Disposal Cell and the Site Boundary—Reclaimed and undisturbed areas occur between the disposal cell and the site perimeter. Both types of areas are in excellent condition. In general, reclaimed areas have good vegetation coverage, mostly grass. However, there are several small areas of sparse vegetation attributed to poor soil conditions (PL-7). As expected, shrubs and forbs are much less abundant and less diverse in reclaimed areas than they are in undisturbed areas. Overall, however, the vegetation at the site is healthy following a winter of above-average snowfall.

Several locations in areas of steep topography had been susceptible to erosion in the past. Snowmelt runoff caused minor rill erosion and sediment deposition at a location near the

southeast corner of the site. No erosion control is necessary at this time, and the area is expected to stabilize; however, this area will continue to be monitored. All other areas were stable with no evidence of new erosion.

Outlying Area—Gunnison County owns the land that adjoins the disposal site boundary to the north and east, and uses the land for a municipal landfill. In 2001, the County installed several fences and monitor wells in these areas. The monitor wells are identified as County Wells 1, 2, and 3 on Figure 8–2. DOE transferred monitor well MW–0717 to the County in 2001. Gates installed in the County fence for access to the wells remain unlocked.

Landfill operations have encroached to within approximately 400 feet of the northeast corner of the DOE property boundary. A diversion ditch and catchment basin were constructed on landfill property north of the site. These features were constructed to control runoff and sediment transport on landfill property. Although landfill activities do not appear to pose a threat to the DOE disposal site, future inspections will continue to monitor the level of activity occurring near the DOE property boundaries and site-surveillance features (e.g., fences, monitor wells).

8.3.2 Follow-Up or Contingency Inspections

DOE will conduct follow-up inspections if (1) a condition is identified during the annual inspection or other site visit that requires a return to the site to evaluate the condition, or (2) DOE is notified by a citizen or outside agency that conditions at the site are substantially changed.

No follow-up or contingency inspections were required in 2008.

8.3.3 Routine Maintenance and Repairs

In 2008, minor repairs were made to the perimeter fence, nine perimeter signs were replaced, and a small shrub on top of the disposal cell was removed.

8.3.4 Groundwater Monitoring

DOE monitors groundwater at the Gunnison Disposal Site to demonstrate compliance with U.S. Environmental Protection Agency (EPA) groundwater protection standards in 40 CFR 192.03 and to demonstrate that the disposal cell is performing as designed. The monitoring network consists of 16 wells, including six point-of-compliance (POC) wells to monitor cell performance, two background wells, and eight wells for water-level measurements (Table 8–2).

In accordance with the LTSP, groundwater was sampled and water levels were measured annually from 1998 through 2001. Following the 2001 sampling event, the monitoring frequency changed to once every 5 years. Monitoring last occurred in 2006. The indicator analyte for cell performance is uranium. Uranium concentrations at monitoring locations have not exceeded background levels, indicating that the disposal cell is performing as designed. No groundwater sampling or measurements were required in 2008—the next sampling event is scheduled for 2011.

Table 8–2. Active Monitor Wells at the Gunnison Disposal Site

Compliance and Background Wells	Water-Level Wells
MW–0720 (compliance)	MW–0630
MW–0721 (compliance)	MW–0634
MW–0722 (compliance)	MW–0663
MW–0723 (compliance)	MW–0709
MW–0724 (compliance)	MW–0710
MW–0725 (compliance)	MW–0712
MW–0609 (background)	MW–0714
MW–0716 (background)	MW–0715

8.3.5 Corrective Action

Corrective action is taken to correct out-of-compliance or hazardous conditions that create a potential health and safety problem or that may affect the integrity of the disposal cell or compliance with 40 CFR 192.

No corrective action was required in 2008.

8.3.6 Photographs

Table 8–3. Photographs Taken at the Gunnison Disposal Site

Photo Location Number	Azimuth	Description
PL–1	290	Broken fence strands near perimeter sign P8.
PL–2	0	Damaged perimeter sign P42.
PL–3	10	Disposal cell viewed from the south.
PL–4	315	East diversion channel along the northeast side of the disposal cell.
PL–5	90	West diversion channel.
PL–6	290	Ponded water at the southeast corner of the disposal cell.
PL–7	290	Poorly vegetated area near the east side of the disposal cell.



GUN 6/2008. PL-1. Broken fence strands near perimeter sign P8.



GUN 6/2008. PL-2. Damaged perimeter sign P42.



GUN 6/2008. PL-3. Disposal cell viewed from the south.



GUN 6/2008. PL-4. East diversion channel along the northeast side of the disposal cell.



GUN 6/2008. PL-5. West diversion channel.



GUN 6/2008. PL-6. Ponded water at the southeast corner of the disposal cell.



GUN 6/2008. PL-7. Poorly vegetated area near the east side of the disposal cell.

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